



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,877	10/09/2003	Yoshiyuki Tonami	36856.1137	9590
35510	7590	05/31/2005		
KEATING & BENNETT, LLP 10400 EATON PLACE SUITE 312 FAIRFAX, VA 22030			EXAMINER LAM, CATHY FONG FONG	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/681,877

Applicant(s)

TONAMI ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Oct. 9<sup>th</sup> 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10-09-03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

Art Unit: 1775

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, drawn to a multilayer composite, classified in class 428, subclass 210.
- II. Claims 12-17, drawn to a method for preparing a multilayer composite, classified in class 427, subclass 96.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make a different product such as a decalcomania. The product as claimed can be made by a different process such as by laminating then sintering.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Atty: Christopher Bennett on May 17<sup>th</sup> 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1-2, 6-8 and 11 rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al (US 6776861).

Wang discloses a ceramic multilayer circuit board comprised of a plurality of constraining tapes (102) and a plurality of primary tapes (101). The constraining tape is

Art Unit: 1775

placed between two primary tapes. The constraining tapes may be placed on the outer surface of the primary tape materials (col 2 L 59-60 & col 3 L 2-3).

The examiner is taking the position that the constraining tapes taught by Wang resemble the correcting insulating layer(s) claimed by Applicant. Since the constraining tapes influence the primary tapes that ensures x-y shrinkage is minimal, if not zero (col 4 L 12-13).

The constraining tapes contain material such as glass and quartz, etc. (col 5 L 18-col 6 L 60). The constraining tapes the primary tapes are initially formed by a slurry dispersion of the glass, ceramic filler, polymeric binder and solvent(s), etc. and cast as a green tape. Via holes are formed in the green tapes and filled with conductive ink. Conductive patterns are formed between the green layers and connected through the conductive ink filled via holes (col 8 L 38-60).

8. Claims 1, 5-7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishide et al (US 6265090) or Nishigaki et al (US 4795670) or Ogiwara et al (US 4764233).

Nishide discloses a multilayer ceramic substrate comprised of a plurality of glass-ceramic layers and an electrically conductive paste.

The glass-ceramic layers before firing (or sintering) called green sheets, are comprised of a glass component and quartz (col 4 L 15-18). The electrically conductive paste is formed onto the surface of the glass-ceramic layers and the conductive paste is connected through via holes formed in the glass-ceramic layers (col 4 L 55-63).

Nishigaki discloses a multilayer ceramic substrate comprised of a plurality of ceramic insulators and circuit patterns.

The ceramic insulators are formed of glass materials and ceramic powder. The glass material can be borosilicate glass and the ceramic powder can be quartz (col 3 L 33-41). The circuit patterns are formed onto the surface of the insulators and are electrically connected through via holes formed in the ceramic green sheets (or ceramic insulators) (col 3 L 65-col 4 L 3).

Ogihara discloses a ceramic multilayer circuit board comprised of a plurality of ceramic insulating layer and electroconductive patterns stacked alternately.

The ceramic insulating layers are made of glasses such as borosilicate glass and quartz (col 2 L 53-60 & col 3 L 1-2 & col 4 L 12-13).

Via holes are formed in the ceramic insulating layers and conductive paste fills into the via holes for connecting the electroconductive patterns on the surface of the insulating layers (col 4 L 24-34).

All of the above prior art teach a ceramic multilayer circuit board comprised of insulating layers and conductive patterns. All the insulating layers are composed of a glass material and quartz. The examiner takes the position that the insulating layers which comprised of glass and quartz in the prior art, inherently possess the warping or distortion correcting function.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1775

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 6776861) or Nishide et al (US 6265090) or Nishigaki et al (US 4795670) or Ogihara et al (US 4764233).

All of the cited prior art references teach a ceramic multilayer circuit board having glass-ceramic insulating layers and conductive layers.

The prior art however are silent about the conductive layers are made from a photosensitive conductive paste nor the insulating layers are made from a photosensitive insulating paste.

However, in view of the prior art teachings, one skill in the art would modify or choose a desired material for the insulating layers and the conductive layers because it is a matter of design scheme.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
May 20, 2005